MICHIGAN DEPT. NATURAL RESOURCES
Forest Management Division
&
MICHIGAN STATE UNIVERSITY
Entomology Department

cooperative FOREST PEST management BULLETIN

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1978

Daniel Mosher Jan Nyrop
Gary Simmons Marcia McKeague

INTRODUCTION

In our first Forest Pest Management Bulletin we stated that this series was to be a monthly endeavor in an effort to keep field personnel informed of current pest problems. An idealized goal, we have found it difficult to assemble the bulletin each month and have decided to make it a bi-monthly series. Timely forest pest problem information will continue to be distributed through Michigan State University's Cooperative Extension Service Pest Alerts.

With the field season now almost behind us, we can begin to tackle the job of data analysis and program improvement. This year the program ran much smoother and was more successful than originally hoped for. Much of this success can be attributed to cooperation and an excellent job done by all of those involved. Certainly with the data and experience gathered, many improvements can be made to increase the effectiveness of the program. The yearly pest report should be available in a few months and will contain a detailed description of program developments.

INSECTS

Spruce-fir defoliation by the SPRUCE BUDWORM appears to be slightly higher in the eastern Upper Peninsula and lower in the western and central sections. A listing of defoliated areas detected by aerial surveillance follows:

County	Acres Class 1*	Class 2**
Eastern Upper Peninsula		
Chippewa	14,080	47,680
Luce	15,360	90,560
Mackinac	13,760	9,280
Schoolcraft	-	1,920
Central Upper Peninsula		
Marquette	-	96,000
Western Upper Peninsula		
Baraga	4,480	640
Ontonagon	-	7,040
Subtotal	47,680	253,120
Total defoliation	300,800	

* Class 1 Only defoliation or brown trees observed

** Class 2 Defoliation and mortality, i.e. both brown and silver gray trees observed.

The attached maps show locations of defoliated areas. An effort should be made to salvage as much volume as possible from the affected areas. First priority should be given to the class 2 areas where mortality is already occurring.

Predictions of SADDLED PROMINENT defoliation based on our earlier pupal and egg mass survey were correct. Northern hardwoods defoliation by this insect is much lower than last year's. Approximately 59,000 acres in Luce County were lightly defoliated (less than 50 percent).

Samples of MITE infested pine and cedar foliage have been sent in from all over the state. There are several species of mites which feed on conifers, the most common being the spruce spider mite. Trees may become brownish-gray or be completely defoliated. Populations often increase during drought or after heavy pesticide application.

Defoliation from LARCH SAWFLY appears to be more widespread this year than last. Tamarack defoliation was reported in Cheboygan, Dickinson, Otsego, and Schoolcraft counties. In most areas the defoliation was less than 50 percent. Most larch will not die from the defoliation and few of the stands affected are merchantable.

Oak Decline in Crawford, Oscoda and Iosco Counties

Mortality of red oak in Crawford, Oscoda and Iosco counties has recently been observed. Mortality can be directly attributed to attacks by the two lined chestnut borer (Agrilus bilineatus) and Armillaria mellea root rot. However, decreased tree vigor due to defoliation by the oak leaf roller (Archips semiferanous) must be indicated as the primary cause of the decline as both Armillaria and the chestnut borer are secondary invaders. Preliminary egg mass sampling indicates that populations of the leaf roller will be high again next year and further defoliation and mortality can be expected unless spring weather, adverse to the insect, forces a collapse of the population. Dead trees are readily discernable and should be marked and utilized if possible. Much of the mortality could be salvaged for firewood use.

Pine Engraver (Ips pini) Outbreak Update

In the June Forest Pest Management Bulletin we reported that an outbreak of pine engraver was detected by aerial surveillance. Ground checks indicated that the attacks occurred last year. Infestation centers are indicated on the attached map. Some beetle activity was observed this year, however, additional damage was much less than that which occurred last year. Damage is discernable as small patches of dead and discolored trees with a peripheral

ring of trees in which only the upper crown is damaged. Dead and damaged trees should be removed as they provide potential brood sites for subsequent populations.

DISEASES

Our recent survey of SCLERODERRIS CANKER on approximately 1,000 acres of jack pine in Schoolcraft County revealed some grim details about the development of this disease. Over 2,000 trees were examined in ten plantations in the affected area. Mortality ranged from 7 percent to 50 percent with an average of 32 percent. The survey results are summarized below:

% Dead Trees	% Living Trees	% Living trees with various levels of branch mortality				
		None	1-25%	26-50%	51-75%	76-99%
32	68	8	62	23	5	2

In addition, about 600 acres in Luce County have been affected, with mortality generally lower (10-20%). Most of the infected plantations are 5-10 years old and were thought to have "grown out" of the height class susceptible to Scleroderris.

The problems encountered with this disease may lead to new management recommendations concerning the replanting of these areas. For example, we are currently looking at a resistant seed source of Scots pine located in Luce County.

POPULATION MONITORING

A key component of a pest management program is accurate and efficient monitoring of pest populations. Until recently, little effort was devoted towards developing sampling schemes to be used in monitoring. We are now placing a greater emphasis on developing such technology. Sample methods are currently being developed for egg masses of the forest tent caterpillar and oak leaf roller in order to better predict upcoming defoliation.

Many potential sample designs are available for both insects, however, to test each design and verify it would be lengthy and costly. A more efficient technique and one which we are utilizing is to completely enumerate a population of egg masses and reconstruct this population on a computer. Sample designs can then be tested and compared for accuracy and ease of use by simulating actual sampling. Results to date are promising and should contribute significantly to the development of better monitoring technology.

It has become evident through the enumeration of forest tent caterpillar egg masses in Emmet County that a potential exists for further defoliation in areas defoliated this past year. The mean number of egg masses for a sample of eleven sugar maples was 32. Approximately 20 egg masses per tree is sufficient for total defoliation. It must be noted that this is only a preliminary observation and further sampling is underway.

SPRUCE BUDWORM DEFOLIATION AND MORTALITY 1978

(FEDERAL LAND NOT INCLUDED)

SCHOOLCRAFT

ALGER

MACKINAC

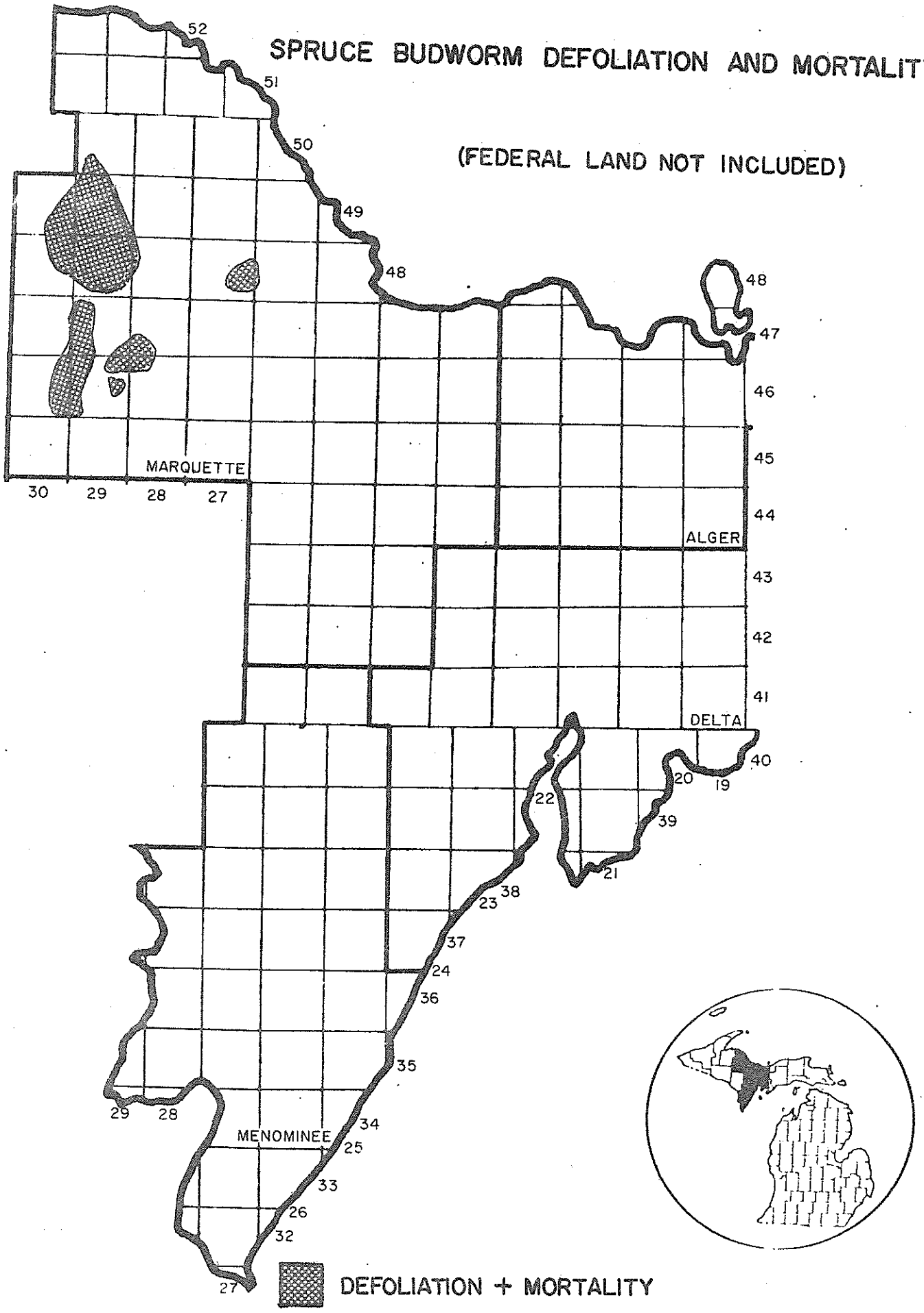
CHIPPEWA

DEFOLIATION

DEFOLIATION + MORTALITY

SPRUCE BUDWORM DEFOLIATION AND MORTALITY

(FEDERAL LAND NOT INCLUDED)



SPRUCE BUDWORM DEFOLIATION AND MORTALITY
1978

(FEDERAL LAND NOT INCLUDED)

KEWEENAW

HOUGHTON

BARAGA

ONTONAGON

GOGEBIC

IRON

DICKINSON

DEFOLIATION

DEFOLIATION + MORTALITY

SADDLED PROMINENT DEFOLIATION

ALGER

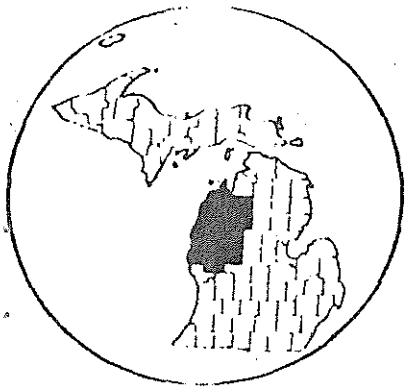
LUCE

MACKINAC

CHIPPEWA

< 50 %

IPS PINI INFECTION CENTERS



▲ .1-1 ACRE AREAS OF DEAD RED PINE

LEELANAU
BENZIE
GRAND TRAVERSE
KALKASKA
MANISTEE
WEXFORD
MISSAUKEE
MASON
LAKE
OSCEOLA
OCEANA
MECOSTA
NEWAYGO